NXP, Sony Partner to Make Chip for NFC Apps

This joint venture will promote adoption of near-field communication technology—especially in Asia and Europe.

By Mary Catherine O'Connor

Nov. 22, 2006—Chipmakers NXP Semiconductors and Sony have signed a memorandum of understanding to create a joint venture that will develop, manufacture and market an integrated circuit (IC) combining NXP's Mifare technology and Sony's FeliCa platform on a single chip.

Mifare and FeliCa are competing contactless smart-card technology platforms comprising the IC, air-interface protocol and security and third-party applications necessary to enable contactless payments. The Mifare and FeliCa platforms can be incorporated in smart cards, such as the Oyster card, used for making fare payments in London's Underground subway, or Hong Kong's Octopus mass-transit card. They can also be built into mobile phones, in which a Mifare or FeliCa chip and applications process electronic payments by turning a phone into an electronic wallet. While Mifare and FeliCa enable contactless payments, they do so only in closed systems where users add value to their accounts, rather than by linking the devices directly to credit or debit accounts.

Through this joint venture, Sony and NXP are collaborating to support and encourage the adoption of near-field communication (NFC) applications. NFC enables mobile devices to be used for contactless-payment applications linked to credit or debit cards.

The NFC protocol describes how RFID-enabled devices can send and receive data across a distance of a few centimeters. Based on high-frequency (13.56 MHz) technology, the NFC protocol is compliant with the ISO 14443 HF air-interface standard and supports the Mifare and FeliCa protocols, which also communicate at 13.56 MHz. Currently, however, the security applications needed to protect the data transmitted while making an electronic payment over the NFC protocol reside on a separate IC, such as a FeliCa or Mifare chip, inside the NFC-enabled device. Contactless-payment applications using FeliCa technology are widespread in parts of Asia, while contactless payment apps using the Mifare platform are common in Europe. By developing an IC that combines both technologies, makers of cell phones and other NFC-enabled devices will be able to sell their products in areas where security applications run on either platform.

The combined chip will store the applications needed to process electronic payments. Without it, a manufacturer would need to embed separate Mifare and FeliCa chips into a device, with both linked to an NFC chip, to make the device usable on both continents. This would drive up the cost and complexity of the devices. The combined chip will also support third-party applications such as the over-the-air payment initialization application developed by Giesecke & Devrient to enable consumers to link their NFC devices to payment accounts more quickly (see MasterCard and 7-Eleven Launch NFC Trial).

The joint venture between Sony and NXP does not yet have a name. The companies say they will establish the venture by the middle of next year.

When incorporated into an NFC device, the combined chip will enable users traveling between Europe and Asia to take advantage of services offered on either the Mifare or FeliCa platform, explains Francesco Prato, NFC business development manager for NXP Semiconductors. The device, he says, will be able to switch between the two platforms.

"The FeliCa services are great in Japan," explains Prato, who is based in Europe but is currently in Japan on a routine business trip, "but right now, I can't use them with my [Mifare-based] phone."

London commuters use the Oyster card to pay mass-transit fares. The card utilizes the Mifare chip to secure and process payments. In Hong Kong, commuters access a similar device, the Octopus card, which incorporates a FeliCa chip, also used widely in contactless smart-card applications in Japan and Singapore. Mobile FeliCa is a version of the chip used in mobile phones operated by FeliCa Networks, a joint venture launched by Sony and Japanese mobile phone operator DoCoMo. The IC enables consumers to use their phones to make payments on a FeliCa-supported payment infrastructure.

RELATED_ARTICLES Thus far, an estimated 1.2 billion Mifare chips have been shipped around the world, Prato claims, with more than 7 million Mifare-compliant reader modules sold. Current shipments of FeliCa chips stand at 170 million units, 30 million of which are used in mobile phones in Japan, according to Sony.

NXP and Sony will each continue to manufacture and sell Mifare and FeliCa chips individually. The two companies have been working together to promote NFC technology for the past two years. In cooperation with other sponsors of NFC industry-adoption group NFC Forum, they are presently developing NFC standards for chips, readers and applications (see NFC Forum Announces Technology Architecture).